

## Section 7: Regional Mitigation Strategy

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### *The 2004 Plan*

The 2004 Plan identified mission/vision statements, six regional goals and corresponding objectives that are all identified in section 1 of this Plan. Each of the planning partners covered by the 2004 Plan was asked to identify both strategies and initiatives that were consistent with these mission/vision statements, goals and objectives. The strategies were very broad stroke statements that read more like objectives. These statements provided each jurisdiction a focus for their actions identified in their mitigation action plan. While the goals and objectives were regional, these strategies were jurisdiction specific, and were based on the capabilities of each jurisdiction to carry out their action plan. Planning tools such as “Mitigation 20/20” were used by some planning partners to identify their actions. These mitigation actions plans were included in Appendix B of the 2004 Plan.

The Regional Hazard Mitigation Plan Planning Group (called Taskforce in 2004) discussed and determined the strategy to be a prioritization of the six (6) regional goals:

- 1) Protect Life and Property
- 2) Support Emergency Services
- 3) Increase Public Awareness
- 4) Preserve Natural Systems and Resources
- 5) Encourage Partnerships
- 6) Enhance Planning Activities

### **First Priority: Protect Life and Property and Support of Emergency Services**

Most organizations and agencies identified initiatives that supported protection of critical infrastructure necessary to providing and supporting emergency services, public safety and essential services during a hazard event. Mitigating the potential loss of these facilities and systems has a direct and immediate impact on the ability to reduce injuries, save lives and minimize property damage. (Critical infrastructure and response capabilities are broadly identified in **Section 6: Vulnerability Assessment, Risk Analysis and Capabilities**; detailed critical facility data is located in “**Annex G**” which is not subject to public disclosure.)

The RHMP partners also identified the need to promote mitigation activities that prevent losses by making homes, businesses, other properties and infrastructures more resistant to the impacts of hazards. The first step in accomplishing this is to implement activities specific to repetitive loss properties and chronic hazard event damages. Viable activities include better coordination among other agencies

governing land use and building regulations to ensure hazard mitigation concerns and strategies are incorporated into development activities.

Protection of life and property often relies on the ability of citizens to take the appropriate action before, during and after a hazard event. Critical to minimizing the loss of life and preventing injuries is ensuring the population understands the potential hazards in our region, how to prepare or mitigate the impacts, and what to do if a disaster should happen. This leads to the next priority, increasing public awareness.

### **Second Priority: Increase Public Awareness and Preserve Natural Systems**

Most agencies felt public education was one of the most important ingredients in the regional mitigation strategy equation, with emphasis on making additional efforts to reach populations who may be more vulnerable. Broadening the spectrum to include businesses and private agencies, in addition to private citizens, would also enhance the region's ability to sustain itself during a disaster or hazard event.

There are numerous natural systems within King County and the Puget Sound region that could be seriously impacted during a manmade or natural hazard event. Working closely with other agencies to understand potential impacts on our natural environment and resources, and to coordinate mitigation goals and objectives will help to support the preservation of natural systems.

### **Third Priority: Encourage Partnerships and Enhance Planning Activities**

Encouraging additional partnerships and enhancing planning activities will build upon the existing planning effort. While the RHMP process is off to a good start, the overall success of a long-term planning effort relies on gaining support and involvement from the region as a whole. Inclusion of other regional partners and contributions from private entities is essential in promoting a comprehensive planning approach. Potential partners and private agencies must see the benefit in participating in such an effort.

### ***The 2009 Plan Update***

As stated in section 4 of this Plan, the Plan update process of the RHMP will be completed in 2 phases. Phase 1 will focus on the preparation of a "Base Plan" that addresses only King County Municipal Government Agencies, while Phase 2 will focus on reformatting the Base Plan back into a Regional plan with comprehensive enhancements. The prioritization discussed above will carry over to the Phase 1 Base Plan, and will be updated under Phase 2. The Phase 1 Base Plan will only evaluate the status of the initiatives identified in the 2004 Plan for King County Municipal Agencies. There will be no new initiatives identified in the Phase 1 Base Plan. Since the strategies identified in the 2004 Plan were broader stroke policy type

directives, no status report will be created for the strategies under the Phase 1 Base Plan. These strategies will be carried over to the Phase 1 Base Plan and reevaluated under Phase 2, and folded into a revised series of regional objectives pertinent to the reassembled planning partnership. The 2004 mitigation strategies and initiatives were developed using a combination of cost-benefit analysis and Mitigation 20/20 software as described below in detail. As no new initiatives have been developed for Phase 1 of the 2009 update, this methodology will remain intact.

## **Cost - Benefit Review**

As in 2003, and within the current 2009 Plan edition, the Cost – Benefit review consideration is a requirement of this mitigation Plan. The Office of Management and Budget Circular A-94 describes the economic principles and methods by which most federal programs must determine the cost-effectiveness of funded projects. OMB A-94 states: “Analysis should include comprehensive estimates of the expected benefits and costs to society based on the established definitions and practices for program and policy evaluation. Social benefits, and not the benefits and costs to the Federal Government, should be the basis for evaluating government programs or policies that have effects on private citizens or other levels of Government.”

## **Elements of Cost - Benefit Review**

Cost - Benefit Review is an effort to objectively prioritize projects that will best serve the community in a cost-effective way. This key element in the planning process is derived from the use of multiple elements. Many of the regional partners participating in the development of the Regional Hazard Mitigation Plan used Mitigation 20/20 software methodology (in 2004) to generate this ratio by using a formula. The formula requires an estimated cost to implement the project, the estimated replacement cost of the infrastructure protected by the project and the population served by the services provided by agencies using the infrastructure. Additional factors might include a valuation of human life derived from the World Trade Center Terrorist Attack on 9/11/01, relative service levels provided by major equipment and/or facilities in a jurisdiction. An effort to quantify other intangible benefits that might contribute to public or responder safety was included by specific agencies as needed.

All signatory agencies to the Regional Hazard Mitigation Plan have included Cost - Benefit Review as a primary consideration in the establishment of their strategy unless otherwise specified in their annex. Only mitigation projects with a ratio greater than 1 have been considered for inclusion in the jurisdiction annexes. Some organizations included greater detail in their Cost - Benefit Review descriptions.

Criteria for evaluating impacts are somewhat more subjective. While some figures are available for dollar damages, productivity and economic losses are more difficult to gauge. Injuries and fatalities are similarly difficult to assess. There is no known method for evaluating and quantifying the impacts of personal injury or loss of life,

and whether the potential exists to affect one life or many. However, without establishing a value to human casualty, calculation of cost-benefit analysis for proposed mitigation projects could not be conducted.

$$\text{Cost} / \text{Benefit} = \text{ratio}$$

Cost-Benefit analysis is required to prioritize mitigation projects. High ratios would receive a higher priority than lower ratios. We will use \$2.3 million as the minimum benefit of one life saved by these projects. The figure was one used by some in the 9-11 World Trade Tower settlement discussions.

Table 7-1 below illustrates the current status of those initiatives identified by King County Municipal Agencies covered in the 2004 Plan. The table summarizes the action, and lists the status as completed, ongoing or no progress reported at this time. (See Annex B for these 2004 materials with status updates noted in upper right-hand corner. Completed 2004 initiatives have been removed to Annex L.) To clarify terminology utilized in this table, the term “short-term” under timeline was assigned to those projects that could be completed in the initial performance period of the Plan, which is 1 to 5 years. Long –term would be any project that may take more than 5 years to implement.

TABLE 7-1.  
ACTION PLAN MATRIX-PROGRESS REPORT

Action Identifier	Initiative Description	Goals	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>King County Sheriffs Office (KCSO)</b>						
KCSO-1	Enhance homeland security, mitigation, and response capabilities by acquiring dedicated staff for training, planning, response, and intelligence sharing and analysis	1	Short-term	High	The KCSO continues to seek opportunities to enhance its homeland security, mitigation and response capabilities. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
<b>Solid Waste Division (SWD) - King County Department of Natural Resources and Parks</b>						
SWD-1	<i>Grid 2 &amp; 3 repairs.</i> Structural seismic retrofit of the Enumclaw transfer station. This initiative sets steel plating to the roof repairs increasing the resistance of the structure to strong earthquakes.	1, 2	Short-term	(high)	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
SWD-2	<i>Perimeter Wall.</i> Phase 2 of the structural seismic retrofit to the Enumclaw transfer station. This initiative sets steel plating to the perimeter wall increasing the resistance of the structure to strong earthquakes.	1, 2	Short-term	(high)	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
SWD-3	<i>Panel to Panel joint connections.</i> Phase 3 of the structural seismic retrofit to the Enumclaw transfer station. This initiative sets connecting the panels with joint connectors increasing the resistance of the structure to strong earthquakes	1, 2	Short-term	(high)	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
SWD-4	<i>Roof parapet bracing.</i> Phase 4 of the structural seismic retrofit to the Enumclaw transfer station. This	1, 2	Short-term	(high)	This project was completed during the initial performance period of the 2004 KCRHMP.	✓

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	initiative sets connecting the roof parapet with steel bracing increasing the resistance of the structure to strong earthquakes					
SWD-5	<i>Sheer wall connections.</i> Phase5 of the structural seismic retrofit to the Enumclaw transfer station. This initiative sets sheer wall bracing for increasing the resistance of the structure to strong earthquakes	1, 2	Short-term	(high)	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
<b>Public Health – Seattle &amp; King County (PHSKC)</b>						
PH-1	Support the general public's health and safety by educating Public Health staff in emergency and disaster response	1, 2	Short-term	High	PH has begun programs to educate staff to respond at home and work to emergencies and disasters. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
PH-2	Enhance communication of Public Health sites internally (both within and between PH sites) as well as with other regional agencies through amateur and short-range radio programs	1, 2	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
PH-3	Develop an infectious disease outbreak response team program	1, 2	Short-term	High	PH continues to seek opportunities to develop an infectious disease outbreak response team program. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O

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PH-4	Educate the public in disaster response activities	1, 2, 3	Short-term	High	PH has completed public health information (i.e. fact sheets) for public distribution during disasters, but seeks additional opportunities for disaster response education. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
PH-5	Support and enhance first responder disaster reporting and regional emergency electronic data collection	1,2	Short-term	High	PH is in the process of developing and testing enhanced first responder reporting capabilities, but seeks additional support to improve these capabilities. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
PH-6a	Mitigate structural damage at Public Health sites. This initiative also involves training to determine structural damage during and after hazard events	1,2	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
PH-6b	Mitigate non-structural damage at Public Health sites. This initiative also involves training to determine non-structural damage during and after hazard events	1, 2	Short-term	Low	The non-structural damage mitigation and non-structural damage determination training initiative was tabled although other mitigation and training activities continue to be sought by PH.	X
PH-7	Enhance syndromic surveillance program to support public health during emergencies and disasters	1, 2, 3	Short-term	High	Enhanced syndromic surveillance has been initiated by PH, although additional support is necessary to expand the program. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
PH-8	Enhance environmental health response programs for terrorist acts involving chemical and radioactive events, threats to food and water	1, 2, 5	Short-term	High	PH continues to seek funding opportunities to advance environmental health programs developed to respond to terrorist acts. This is considered to be an ongoing action that will be carried over to the	O

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	supply and airborne illnesses				2009 Base Plan.	
PH-9	Duplicate of PH-2					
<b>King County Information and Technological Services Division (OIRM)</b>						
ITS-1	Provide alternative sites and communication paths for County's information and communication infrastructure. This initiative also seeks to retrofit existing facilities to improve disaster resistance.	1, 2, 5	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
<b>Metro King County Transit (KC DOT)</b>						
MKCT-1	Construct downtown Seattle transit tunnel positive ventilation system to allow for decontamination and recovery following chemical, gas, or fire event.	1, 2	Short-term	High	Project study and design are in progress. MKCT continues to pursue opportunities to develop the transit tunnel ventilation system. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
MKCT-2	Install security cameras on public buses to deter crime associated with civil unrest and terrorist acts	1, 2	Short-term	High	This project is in the study and developmental stage although additional funding sources are necessary to complete the security camera installation project. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
<b>King County Facilities Management Division (FMD)</b>						
FMD-1	Structural seismic retrofit of county buildings to improve resistance to earthquakes	1, 2	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
FMD-2	<i>Administration Building 401-403 Security Additions.</i> Install motion detector, duress buttons, camera and monitoring system	NA	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓

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Action Identifier	Initiative Description	Goals	Time Line	Priority	Status	Completion Status (X,O,✓)
FMD-3	<i>Administration Building 5th floor - Elections Security Upgrade.</i> Install card access control, duress buttons, camera and video monitoring system	NA	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
FMD-4	<i>Administration Building 6th floor - Finance Security Upgrade.</i> Install card access control, duress buttons, camera and video monitoring system	NA	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
FMD-5	<i>Elections 1st Ave MBOS Security Upgrade.</i> Install card access control, duress buttons, camera and video monitoring system	NA	Short-term	Low	This project was removed from FMD's action plan, although building security upgrades continue to be sought by FMD.	X
<b>King County Fire Marshall's Office (FMO)</b>						
FMO-1	Continue inspection of existing and new construction	1, 2, 3	Long-term	High	This project is ongoing although other opportunities are sought to continue to provide inspections. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
FMO-2	Provide plan reviews for noted construction	1, 2, 3	Long-term	High	This project is ongoing although additional support is necessary to provide plan reviews. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
FMO-3	Support education, training and information programs	1, 2, 3	Long-term	High	This project is ongoing although additional funding sources are necessary to support programs. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O
FMO-4	Work with schools and fire service public educators to deliver public safety messages	1, 2, 3, 5	Long-term	High	Other resources are needed to further the public safety campaign. This is considered to be an ongoing action that will be carried over to the 2009 Base Plan.	O

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Action Identifier	Initiative Description	Goals	Time Line	Priority	Status	Completion Status (X,O,✓)
<b>King County Department of Natural Resources and Parks (DNRP)</b>						
DNRP-1	Snoqualmie 205 (Fund318F). Cooperative project between King County, City of Snoqualmie and Corps of Engineers to improve flood hazard conditions above Snoqualmie Falls through major channel excavation improvements.	1, 2, 4, 5	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP.	✓
DNRP-2	North Bend 205 (Fund318F and 318U). This project is a cooperative flood damage reduction project between the Corps of Engineers (Corps), King County and the City of North Bend. The project will evaluate cost effective flood reduction options along the South and Middle Fork Snoqualmie Rivers in and around the City.	1, 2, 4, 5	Long-term	High	This initiative is in progress. Preliminary investigations underway. Likely re-scope to expand project area and redefine funding sources and partnerships. This on-going project has been transferred to the King County Flood Control District.	O
DNRP-3	Rivers Major Maintenance (Fund 318F and 318U). Major rivers maintenance project includes funds to repair damaged structural elements of King County's extensive inventory of flood protection facilities.	1, 2, 4	Long-term	High	The Rivers Major Maintenance initiative is an on-going body of work. King County has completed approximately 33 maintenance projects under this current plan. This on-going project has been transferred to the King County Flood Control District.	O

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Action Identifier	Initiative Description	Goals	Time Line	Priority	Status	Completion Status (X,O,✓)
DNRP-4	Floodway Corridor Restoration (FUND 318F and 318U). Floodway corridor restoration projects include the removal, slope-back or setback of County-owned flood protection facilities and other structural features to allow for improved riparian habitat, greater channel diversity and migration, reclaimed flood storage and enhanced open space or recreational/-interpretive uses.	1, 3, 4	Long-term	High	The Floodway Corridor Restoration initiative is an on-going body of work. King County has completed approximately six projects with others in progress. This on-going project has been transferred to the King County Flood Control District.	O
DNRP-5	Flood Hazard Mitigation (FUND 318F and 318U). Flood hazard mitigation projects include the acquisition of repetitively damaged homes, purchase of underdeveloped land to prevent future development in flood prone areas, and where cost-effective and feasible, the elevation of residential homes that sustain recurring deep, low-velocity flooding.	1, 4	Long-term	High	The Flood Hazard Mitigation initiative is an on-going body of work. King County has completed approximately 18 mitigation projects. This on-going project has been transferred to the King County Flood Control District.	O
DNRP-6	Critical Facility Retrofit. Currently, the fuel supply tanks for King County flood facilities cannot withstand a moderate to major quake. This project would retrofit the Black River Pump Station.	1, 2	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP. In addition, the USGS Snoqualmie Cableway project has also been completed.	✓
DNRP-7	Critical Facility Relocation. Relocate the Flood Warning Center (FWC) from its current location that is subject to severe seismic exposure, to a location that is	1, 2	Short-term	Medium	This project was completed during the initial performance period of the 2004 KCRHMP. The Flood Warning Center has been relocated to the King Street Center, which is built to modern	✓

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Action Identifier	Initiative Description	Goals	Time Line	Priority	Status	Completion Status (X,O,✓)
	not subject to any natural hazard risk exposure.				standards to address seismic concerns.	
DNRP-8	Critical Facility Upgrade. Update the flood warning telemetry and gauging, computers, software applications, emergency power and other response facilities.	1, 2	Short-term	High	This project was completed during the initial performance period of the 2004 KCRHMP. King County has developed and started testing a system that automatically sends out e-mail and pager alerts when real-time gage data exceeds flood phase thresholds. King County has developed web pages designed for PDA and cell phone users to access real-time river gauge data. There is a need for continuous monitoring and upgrading of equipment and systems over time.	✓
DNRP-9	Flood Hazard Reduction Programs. This initiative includes elements such as hazard identification, warning, information dissemination and public outreach are vital to the mitigation of the natural hazards impacting King County.	1, 2, 3	Long-term	Medium	This initiative is an ongoing work program to provide flood warning, public outreach and hazard identification. This on-going project has been transferred to the King County Flood Control District.	O
<p><i>Completion status legend:</i>  ✓ = Project Completed  O = Action on-going towards completion  X = No progress at this time</p> <p><i>Goals:</i>  1) Protect life and Property  2) Support Emergency services  3) Increase Public Awareness  4) Preserve Natural systems and Resources  5) Encourage Partnerships</p>						